

Unit: Atomic Structure

IB Expectations/ Assessment Criteria

DP Group 4: Chemistry, DP - Age 16-18, Objectives

It is the intention of all the Diploma Programme experimental science courses that students achieve the following objectives.

- 1. Demonstrate an understanding of: a. scientific facts and concepts b. scientific methods and techniques c. scientific terminology d. methods of presenting scientific information.
- 2. Apply and use: a. scientific facts and concepts b. scientific methods and techniques c. scientific terminology to communicate effectively d. appropriate methods to present scientific information.
- 3. Construct, analyse and evaluate: a. hypotheses, research questions and predictions b. scientific methods and techniques c. scientific explanations.
- 4. Demonstrate the personal skills of cooperation, perseverance and responsibility appropriate for effective scientific investigation and problem solving.
- 5. Demonstrate the manipulative skills necessary to carry out scientific investigations with precision and safety.

Approach

Significant concept(s) / Considerations

Atoms are the building blocks of all matter.

Guiding Questions

Learner Profile

Is our study of atoms complete?

- Inquirers
- Communicators
- Open-minded

Central Idea / Content

Learning Objectives

Structure of atom.

Position of protons, neutrons and electrons in the atom.
Relative masses and relative charges of protons, neutrons and electrons.
Define mass number (A), atomic number (Z) and isotopes of an element.
Symbol for an isotope given its mass number and atomic number (example ^{12}C).

			<p>Calculate the number of protons, neutrons, and electrons in atoms and ions from the mass number, atomic number and charge.</p> <p>Compare the properties of the isotopes of an element.</p> <p>Discuss the uses of radioisotopes.</p> <p>Describe and explain the operation of a mass spectrometer – vaporization, ionization, acceleration, deflection and detection.</p> <p>How the mass spectrometer can be used to determine relative atomic mass using the ^{12}C scale.</p> <p>Calculate the non integer relative atomic masses and abundance of isotopes from given data.</p> <p>Describe the electromagnetic spectrum.</p> <p>Distinguish between a continuous spectrum and a line spectrum.</p> <p>How the lines in the emission spectrum of hydrogen are related to electron energy levels.</p> <p>Deduce the electron arrangement for atoms and ions upto $Z = 20$.</p>
<u>Assessment</u>			
A unit Test Summative: Standardized Test A unit test done.			
Information Literacy & ICT	International Mindedness	TOK	
Research using internet.	Appreciate the contribution of chemists from around the world in trying to understand the structure of an atom.	What is the significance of the model of the atom in the different areas of knowledge?	
Strategies / Activities / Differentiation		Resources	
Extra support lessons for students with learning difficulties.		Chemistry Course Companion Teacher assisted learning materials Independent research instruments	

	Worksheets
Unit Reflections	
Taken by Mr. Joshi. Some topic like spectrometer and spectrum had to be retaught. The students are now better.	